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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.           | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------------|------------------|
| 10/647,977  | 08/25/2003  | Barry D. Kuban       | 895,675-004                   | 2832             |
| 34263   | 7590        | 01/22/2009           |                               |                  |
| O'Melveny & Myers LLP<br>IP&T Calendar Department L.A-1118<br>400 South Hope Street<br>Los Angeles, CA 90071-2899 |             |                      | EXAMINER<br>CHENG, JACQUELINE |                  |
|   |             |                      | ART UNIT                      | PAPER NUMBER     |
|   |             |                      | 3768                          |                  |
|   |             |                      | MAIL DATE                     | DELIVERY MODE    |
|   |             |                      | 01/22/2009                    | PAPER            |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/647,977

**Applicant(s)**

KUBAN ET AL.

**Examiner**

JACQUELINE CHENG

**Art Unit**

3768

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-14, 16-19, 21-26, 28-37 and 39-47 is/are pending in the application.
- 4a) Of the above claim(s) 47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-14, 16-19, 21-26, 28-37 and 39-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/3/08.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed October 14, 2008 have been fully considered but they are not persuasive. The examiner respectfully disagrees with the applicant's arguments that the combination of Prause (US 6,148,095) and Slager (US 5,771,895) do not disclose the invention as claimed. In particular the applicant argues that Slager does not disclose selective acquisition of blood-vessel data during a cyclical portion of heart. In contrast, Slager discloses a method and system for selective acquisition of blood-vessel data by gating the images acquisition cycle to an ECG signal in order to effectively remove cardiac and respiratory movements (col 5 line 14-25). By gating the image acquisition, Slager is triggering the image acquisition. Furthermore Slager discloses that the pull-back is applied step-wise each time after the ultrasound image has been acquired in an ECG triggered mode, which reads as the catheter is gated (triggered) to acquire an image, afterwards which the pull-back is then applied (col. 5 line 26-28).
2. In response to the applicant's arguments that the applicants are not claiming X-ray acquisition of a catheter center line, Prause in view of Slager disclose the invention as claimed of gating the ultrasound images (the images of the blood vessel) as discussed above. The applicant also argues that Slager discloses that the IVUS images are recorded in 25 image/second (col. 12 line 8-29) so therefore is not taking triggered images, however the examiner would like to point out that these 25 images/second are directed to the automated pull-back method. Slager goes on to further disclose that other means of pull back can be used, which in combination of a triggered

imaging/pull back would result in the images being recorded in a time frame correlating to a regular heart cycle.

3. Therefore it is believed that the previous rejection dated May 13, 2008 still stands and is repeated below.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 3, 5-9, 11-14, 16-19, 21-29, 31-35, 37, 39, 40, and 42-46** are rejected under 35 U.S.C. 103(a) as being unpatentable over Prause (US 6,148,095) in view of Slager (US 5,771,895).

Prause discloses a system and method of acquiring blood vessel data in the form of images comprising a catheter and data-gathering and processing devices of a data fusion unit on a programmed computer and a data storage unit (col. 4 line 8-35). The IVUS catheter is withdrawn at a fixed speed while the images are being taken (col. 5 line 5-8). The images can be correlated so as to acquire the data during a certain heart phase of interest. This phase correlation uses an ECG to obtain the heart phase of interest to ensure the images are obtained under consistent conditions (col. 6 line 24-33). To suppress heart and breathing motions in the images a gated image acquisition can be used (col. 11 line 41 - 55). Although Prause does not explicitly disclose using ECG triggered image acquisition this is well known in the art and is often taught

as either method can be used. An example of one such teaching is disclosed in Slager. Slager discloses a system and method of obtaining an accurate 3D reconstruction of a blood vessel using an IVUS with rotational transducers and using either ECG gated or ECG triggered data (abstract, col. 5 line 7-28). By using the triggering method instead of the gating method the sequence of cross-sectional ultrasound images can be immediately stacked without having to sort through a bunch of images, discarding the distorted images.

6. Prause also does not disclose that the transducer is adapted to rotate, but it would be obvious to one skilled in the art to use any comparable IVUS system with the system of Prause. Slager discloses such an IVUS system in which the transducers can rotate (col. 6 line 50-55) and wherein the rotational orientation can be identified (col. 3 line 50-54). So therefore it would be obvious to one skilled in the art at the time of the invention to combine Slager with Prause to further the utility of Prause to obtain data from any particular desired angle of the blood vessel and to quicken the image stacking time without having to sort through unneeded images.

7. **Claims 4 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Prause in view of Slager, and further in view of Vince (US 6,200,268 B1). Neither Prause nor Slager discloses a plurality of transducers spaced circumferentially, but it would be obvious to one skilled in the art to use any comparable IVUS system with the system of Prause and Slager. Vince discloses such an IVUS system that comprises an array of transducers circumferentially positioned (col. 3 line 50-53) so therefore it would be obvious to one skilled in the art at the time of the invention to combine Vince with Prause and Slager to further the utility of Prause in view

of Slager to obtain data from any angle of the blood vessel without having to spend time rotating the catheter to position the transducer in the correct direction.

8. **Claims 10, 30, and 36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Prause in view of Slager, further in view of Dias (US 5,284,148). Neither Prause nor Slager discloses acquiring the blood vessel data when the transducer is rotationally orientated in a predetermined location. However if there is a particular region of interest that one is trying to image, it would be obvious to need to have the transducer rotationally orientated in the correct (predetermined) direction/location. For example Dias discloses an intravascular probe where in the probe is rotated to a predetermined position and takes measurements (images) while at that predetermined position (col. 3 line 1-6).

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

10. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACQUELINE CHENG whose telephone number is (571)272-5596. The examiner can normally be reached on M-F 10:00-6:30.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JC

/Long V Le/  
Supervisory Patent Examiner, Art Unit 3768